

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 16 DEC 2004

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| Applicant's or agent's file reference 21433WO | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416) | |
| International application No. PCT/NL 03/00874 | International filing date (day/month/year) 10.12.2003 | Priority date (day/month/year) 19.12.2002 |
| International Patent Classification (IPC) or both national classification and IPC C08K5/49 | | |
| Applicant DSM IP ASSETS B.V. et al. | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of 1 sheets.

3. This report contains indications relating to the following items:
- I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

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|---|---|
| Date of submission of the demand 01.07.2004 | Date of completion of this report 15.12.2004 |
| Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 | Authorized Officer Glomm, B Telephone No. +49 89 2399-7158  |

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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/NL 03/00874

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-13 as originally filed

Claims, Numbers

1-11 received on 05.08.2004 with letter of 05.08.2004

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Statement

| | | |
|-------------------------------|-------------|------|
| Novelty (N) | Yes: Claims | |
| | No: Claims | 1-11 |
| Inventive step (IS) | Yes: Claims | |
| | No: Claims | 1-11 |
| Industrial applicability (IA) | Yes: Claims | 1-11 |
| | No: Claims | |

2. Citations and explanations

see separate sheet

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International application No. PCT/NL 03/00874

Cited documents:

- D1: EP-A-0 416 430 (BASF AG) 13 March 1991 (1991-03-13)
- D2: WO 00/75233 A (CREVECOEUR JEROEN JOOST ;KONING CORNELIS EME (NL); DSM NV (NL); KO) 14 December 2000 (2000-12-14)
- D3: US-A-5 541 267 (AKKAPEDDI MURALI K ET AL) 30 July 1996 (1996-07-30)
- D4: EP-A-0 498 977 (MITSUI DU PONT POLYCHEMICAL) 19 August 1992 (1992-08-19)

1. Novelty (Art. 33 (2) PCT)

The cited prior art document D1 discloses a flame retardant polyamide compound comprising a polyamide polymer, a polyamide oligomer, and a halogen-free phosphorous containing flame retardant as specified in detail in present independent main claim 1 (for relevant passages, see the corresponding International Search Report).

Consequently, said document D1 anticipates the subject matter of present claim 1.

The same considerations also relate to the additional features of the following claims 2 to 11 when taking into account the full disclosure of said document D1.

The considerations of the applicant as provided in his letter dated August 05, 2004 are not convincing for the following reasons:

Present document D1 on page 2, lines 29 to 33 discloses polyamids, which are

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further specified in lines 3/4 of present independent main claim 1 as having a molecular weight range of " at least 5000 " (see D1, page 2, line 31). This range, however, clearly overlaps with the range of " ... at most 7500 ..." as claimed, such anticipating the polyamide oligomer component of said claim 1. Together with the full disclosure of said D1 as concerns especially the other components C and E (see D1, page 2, lines 5 to 8 and corresponding passages in subsequent text), the compositions of D1 are still fully covered by the very broad and general wording of present main claim 1.

As regards the feature of lines 4/5 of present main claim 1, according to which the claimed polyamide oligomer is melt-processable and semicrystalline or amorphous, the attention of the applicant is drawn to the fact, that this feature is implicitly disclosed by said document D1. Implicit disclosure corresponds to the fact, that the claimed product is regarded as being anticipated actually by said prior art document D1, even if the claimed parameters as specified in the lines 4/5 of present main claim 1 are not expressly mentioned therein, i.e., the parameters are regarded as being actually present in the prior art embodiments, but simply not determined and/or mentioned expressly.

Actually, it appears to be clear and self-evident for any average person skilled in the art, that polyamides in general are melt-processable, on the one hand, and that they are either semicrystalline or amorphous, on the other hand. Therefore, said feature is not capable of rendering present main claim 1 novel over D1.

To sum up, the examiner still feels unable to identify any technical feature of present claim 1, which is not fully anticipated by said prior art document D1.

Therefore the subject matter of present application is not new in view of the disclosure of cited document D1.

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2. Inventive Step (Art. 33 (3) PCT)

Providing an amended main claim which meets the requirements of Art. 33 (2) PCT, the applicant in the European regional phase, if any, should relate the distinguishing feature to a surprising (unexpected) technical effect or make credible or plausible that the distinguishing feature is not derivable from the prior art teaching (Art. 33 (3) PCT).

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Enclosure to letter dated 05 August 2004 concerning European Patent Appln. No. PCT/NL03/00874; -DSM IP Assets B.V.-; ref. 21433WO.

AMENDED CLAIMS

1. Flame retardant polyamide compound comprising a polyamide polymer having a weight-average molecular weight of at least 10.000 g/mol, a halogen-free flame retardant and a polyamide oligomer having a weight-average molecular weight of at most 7500, and wherein the polyamide oligomer is a melt-processable semi-crystalline or amorphous polyamide, characterized in that the halogen-free flame retardant is a halogen-free phosphorous containing flame retardant.
2. Compound according to claim 1, wherein the polyamide oligomer is a polyamide with a melting temperature of at least 260°C.
3. Compound according to claim 1 or 2, wherein the polyamide oligomer is present in an amount of 0.1-30 weight %, relative to the total weight of polyamide.
4. Compound according to any of claims 1-3, wherein the halogen-free phosphorous containing flame retardant is a melamine based phosphorous compound.
5. Compound according to any of claims 1-4, wherein phosphorous containing flame retardant is present in an amount between 1 and 100 parts by weight, relative to a total amount of polyamide of 100 parts by weight.
6. Process for preparing a compound according to any of claims 1-5 comprising melt-mixing of a polyamide composition comprising a polyamide polymer having a weight-average molecular weight of at least 10.000 g/mol, a polyamide oligomer having a weight-average molecular weight of at most 7500, and a halogen-free phosphorous containing flame retardant.
7. Process according to claim 6, wherein the polyamide polymer is a polyamide with a melting temperature of at least 260°C.
8. Process according to any of claims 6-7, wherein the polyamide oligomer has a melting temperature of at most 20°C above the melting temperature of the polyamide polymer.
9. Process according to any of claims 1-5, wherein the polyamide compound comprises a reinforcing component.
10. Use of a polyamide compound according to any of claims 1-6 for the preparation of a molded part.
11. Molded part obtainable by melt-processing of a polyamide compound according to any of claims 1-6.